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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,328	06/25/2003	Yasuto Karasawa	07200/034001	3185

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OSHA LIANG L.L.P.  
1221 MCKINNEY STREET  
SUITE 2800  
HOUSTON, TX 77010

EXAMINER
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DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/606,328		KARASAWA, YASUTO	
	<b>Examiner</b>		<b>Art Unit</b>	
	Rakesh K. Dhingra		1763	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 1 and 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-11 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>05/04</u> .                                                               | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-2, drawn to a method, classified in class 427, subclass 248.1.
- II. Claims 3-11, drawn to an apparatus, classified in class 118, subclass 728.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as sand blasting.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Jonathan Osha by Examiner Chen on September 28, 2005, a provisional election was made without traverse to prosecute the invention of Group II, claims 3-11. Affirmation of this election must be made by applicant in replying

to this Office action. Claims 1-2 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Figure 4 – Reference number “P” is not indicated on the drawing as mentioned on page 14, line 14 of the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claim 3 is rejected under 35 U.S.C. 102(e) as being anticipated by Jackson (US patent No. 6,656,017).**

Regarding Claim 3: Jackson teaches an apparatus (Figures 7, 4A, 4B) for preventing a substrate 170 from being contaminated by particles, said structure comprising:

a clean cell (housing) 44 (Figure 3A) having the inside thereof kept at a specified cleanliness;

a holding means 168 (Figure 7) for holding said substrate horizontally inside said housing; and

a gas flowing means 162, 164 for flowing clean gas along the top surface of said substrate at a specific relative speed with respect to top surface of said substrate, such that a protective coating of said clean gas for protecting said substrate from particles is formed all over an entire area of said top surface of said substrate (Abstract and Column 7, line 35 to Column 8, line 50, Column 9, line 62 to Column 10, line 40).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (US Patent No. 6,656,017) in view of Johnsgard et al (US Patent No. 6,902,622).**

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Regarding Claim 4: Jackson teaches all limitations of the claim except that protective coating (of gas) includes a laminar boundary layer, transition layer, and/or turbulent boundary layer.

Johnsgard et al teach an apparatus (Figures 1, 4, 12A, 12B) that includes a process cavity 303 with a substrate holder 401 and has gas flow tubes 427 and gas flow-out slots 430 to spread the gas over the substrate surface. Johnsgard et al also teach (Figures 1, 12A) that a when gas stream 105 passes over the substrate 102, part of it converts into a laminar/turbulent flow depending on the temperature gradient and the gap between substrate top surface and the inner top surface of chamber 101.

Johnsgard et al further teach that due to the gas flow a boundary layer 108 is produced above the surface of wafer 102 (Figure 1) whose profile/shape (which includes laminar boundary layer, transition layer and turbulent boundary layer) can be controlled by varying the gap (distance) between susceptor surface 401 and chamber top plate 409 (Column 2, lines 5-25, Column 4, lines 20-25, Column 8, lines 4-15, Column 11, line 65 to Column 12, line 55, Column 17, lines 15-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to control/optimize the gap (distance) between susceptor surface and chamber top plate as taught by Johnsgard et al in the apparatus of Jackson to obtain desired shape/profile of the laminar boundary layer created due to protective coating generated by gas flow over substrate surface.

In this regard courts have ruled (Case Law):

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“It is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).”

“It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as through routine experimentation in the absence of a showing of criticality. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).”

“Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. It would have been obvious to one having ordinary skill in the art to have determined the optimum values of the relevant process parameters through routine experimentation in the absence of a showing of criticality. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).”

Regarding Claim 5: Johngard et al teach that substrate support 401 is adapted to move substrate during processing (Column 8, lines 35-60).

Regarding Claims 6, 7: Jackson teaches (Figure 7) that the structure for gas flowing means includes a blower (fan) for circulating gas within said housing and filter (HEPA) disposed in the path of gas circulation for cleaning the gas to a clan gas having a specified cleanliness (column 10, lines 10-25).

Regarding Claims 8-11: Jackson teaches that the apparatus (Figure 4A) comprises an internal ionizer 64 connected to power supply 90 that ionizes the entire internal cavity 50 (Column 7, lines 50-60).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

**Sherman et al (US Patent No. 6,790, 620)** teach (Figures 3a-c, 8a-c) plasma panels 112 that has 26 electrode strips 202 on one side and a single electrode 206 on the opposite side and RF voltage is applied to electrodes to generate a plasma that can be

used to control boundary layer profiles (laminar, transitional, fully turbulent) and control flow of neutral species (Abstract and Column 10, line 64 to Column 11, line 5).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



Parviz Hassanzadeh  
Supervisory Patent Examiner  
Art Unit 1763